

Clean version of new claims

29. (New) A layered sheet construction comprising:

- at least one, gas permeable, water impermeable layer; and
- a gas delivery layer proximate the layer of part a, which gas delivery layer comprises a base having a side on which there are a plurality of walls forming a plurality of flow channels through which gas can be conveyed to the layer of part a.

30. (New) The layered sheet construction of claim 29 in which the layer of part a. is porous.

31. (New) The layered sheet construction of claim 30 in which the layer of part a. is a microporous layer coated with a gas permeable, polymeric coating.

32. (New) The layered sheet construction of claim 29 of which the gas delivery layer has two sides having a plurality of walls forming flow channels through which gas can be conveyed, and having gas permeable, water impermeable layers on both sides of and proximate to the gas delivery layer.

33. (New) The layered sheet construction of claim 29 on which there are micro-channels in the base that extend the length of the flow channels.

34. (New) The layered sheet construction of claim 29 in which the layered sheet construction or the layer of part a. has a surface that is either one or both of undulated or corrugated in shape.

35. (New) The layered sheet construction of claim 29 which is wound into a helix having successive winds spaced apart to form a gap.

36. (New) The layered sheet construction of claim 29 further comprising a microbial population proximate the layer of part a.

37. (New) A process for removal of at least one organic substance or at least one nitrogen source from an aqueous medium containing such a source, said process comprising:

- a. providing at least one layered sheet construction of claim 29;
- b. establishing a microorganism layer on the layer of part a. of the layered sheet construction;
- c. supplying a gas to the gas delivery layer of the layered sheet construction; and
- d. contacting the aqueous medium with the microorganism layer.

38. (New) A layered sheet construction comprising:

- a. at least one, gas permeable, water impermeable layer;
- b. a gas delivery layer proximate the layer of part a. which gas delivery layer provides a means through which gas can be conveyed to the layer of part a;

the layer of part a. being oleophobic or having improved olephobicity, having at least one of the following characteristics:

- i. a coating of a composition comprising a fluorochemical or fluoropolymer which optionally is curable;
- ii. a surface treated by ionizing radiation or plasma discharge in the presence of a gaseous fluorinated species;
- iii. fluorochemical additives within the composition of the gas permeable, water impermeable layer; or
- iv. a coating of polydimethylsiloxane.

39. (New) The layered sheet construction of claim 38 in which the layer of part a. is porous.

40. (New) The layered sheet construction of claim 38 in which the gas delivery layer comprises a material that is porous and gas permeable.

41. (New) The layered sheet construction of claim 40 in which the gas delivery layer comprises a material selected from the group consisting of foams, woven fabrics and non-woven fabrics.

42. (New) The layered sheet construction of claim 38 in which the gas delivery layer comprises a base having a side on which there are a plurality of walls forming flow channels through which gas can be conveyed to the layer of part a.

43. (New) A process for removal of at least one organic substance or at least one nitrogen source from an aqueous medium containing such a source, said process comprising:

- a. providing at least one layered sheet construction of claim 38;
- b. establishing a microorganism layer on the layer of part a. of such layered sheet construction;
- c. supplying a gas to the gas delivery layer of said layered sheet construction; and
- d. contacting the aqueous medium with the microorganism layer.

44. (New) A layered sheet construction comprising:

- a. at least one, gas permeable, water impermeable layer;
- b. a gas delivery layer proximate the layer of part a. which gas delivery layer provides a means through which gas can be conveyed to the layer of part a; and
- c. at least one microbial support layer proximate the layer of part a. located on the side of the layer of part a. opposite the gas delivery layer, said microbial support layer comprising a material suitable for the attachment and growth of a microbial population.

PLC/ABP

45. (New) The layered sheet construction of claim 44 in which the layer of part a. is porous.
46. (New) The layered sheet construction of claim 44 further comprising a microbial population either one or both of proximate or inside the microbial support layer.
47. (New) The layered sheet construction of claim of claim 44 wherein the microbial support layer is positively charged.
48. (New) The layered sheet construction of claim 44 wherein the microbial support layer comprises at least one absorptive filler material selected from the group consisting of fossil lignocelluloses, peat, coal, coke, charcoal, activated carbon, finely divided distillation residues, inorganic fillers, plastic particles, and mixtures thereof.
49. (New) The layered sheet construction of claim 44 in which the gas delivery layer comprises a base having a side on which there are a plurality of walls forming flow channels through which gas can be conveyed to the layer of part a.
50. (New) The layered sheet construction of claim 44 in which the gas delivery layer is both porous and gas permeable.
51. (New) The layered sheet construction of claim 50 in which the gas delivery layer comprises a material selected from the group consisting of foams, woven fabrics and non-woven fabrics.
52. (New) The layered sheet construction of claim 44 in which the layer of part a. is oleophobic or has improved oleophobicity, having at least one of the following characteristics:
 - i. a coating of a composition comprising a fluorochemical or fluoropolymer which optionally is curable;

B. W. H.

- ii. a surface treated by ionizing radiation or plasma discharge in the presence of a gaseous fluorinated species;
- iii. fluorochemical additives within the composition of the gas permeable, water impermeable layer; or
- iv. a coating of polydimethylsiloxane.

53. (New) A process for removal of at least one organic substance or at least one nitrogen source from an aqueous medium containing such a source, said process comprising:

- a. providing at least one layered sheet construction of claim 44;
- b. establishing a microorganism layer on or in the microbial support layer of such layered sheet construction;
- c. supplying a gas to the gas delivery layer of said layered sheet construction; and
- d. contacting the aqueous medium with the microorganism layer.